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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/072,953	02/12/2002	Naoyuki Tokuda	P67089US0	2253

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EXAMINER

NG, EUNICE

ART UNIT	PAPER NUMBER
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2654

DATE MAILED: 08/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/072,953

Applicant(s)

TOKUDA ET AL.

Examiner

Eunice Ng

Art Unit

2654

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 8-9 is/are rejected.
- 7) ☒ Claim(s) 4-7 and 10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Information Disclosure Statement

1. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

A copy of the pertinent art in "Numerical Recipes in C: The Art of Scientific Computing" by William H. Press, et al., Cambridge University Press, referenced on page 6 of the specification, needs to be provided and cited on the information disclosure statement.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-3 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hargrave, III et al., US Patent No. 6,131,082 (filed Jun. 7, 1995), in view of Landauer et al., US Patent No. 5,301,109 (filed Jul. 17, 1991).

Art Unit: 2654

Regarding claim 1, Hargrave, III et al. disclose a method of setting up and using a computer-assisted memory translation scheme for translating a sentence between two languages (see column 1, lines 11-14 and column 5, lines 11-16) comprising the steps of:

constructing a template database having a plurality of document vectors, respectively (see Table 4 in column 11 which represents the data included in each text segment vector (an n-gram or word along with weight values) and also “may be organized in database files in any convenient manner,” synonymous with a template database);

matching the sentence to a subset of said plurality of templates having a closest similarity to said sentence in said latent semantic space (see lines 2-7 in column 5, describing the use of a similarity function for the vectors associated with a source language text string and target language text string, which generates a ranking of possible matches for the most similar text segments);

selecting, from said subset, a set of items having a heaviest weighted common subsequence between said sentence and said subset of templates (see column 14, lines 9-15, which describes grouping text segments having the highest score and sorted so that the most similar documents are retrieved first, synonymous with the idea of selecting, from a subset, a set of items having a heaviest weighted common subsequence after ranking); and

selecting, from the set of items, a template closest to a meaning of said sentence (see column 14, lines 16-18, describing a score given to the degree of matching between a query vector and a text segment vector, synonymous to a source language template and a target language template, for the purpose of selecting the template closest to the translation).

Art Unit: 2654

But Hargrave, III et al. fail to teach all the limitations of claim 1 including “projecting the document vectors into latent semantic space.” However, these features are well known in the art as evidenced by Landauer et al., which disclose a computer information retrieval using latent semantic structure comprising:

projecting the document vectors into latent semantic space (see lines 46-48 of column 1 and column 1, line 68 to column 2, lines 1-4);

One of ordinary skill in the art at the time of the applicant's invention would have clearly recognized that using the technique of projecting the document vectors into latent semantic space would provide a faster matching procedure by using vector-based retrieval (see column 5, lines 7-9 of Hargrave, III et al.) and using latent semantic space would help represent them as parameters in such a way that dependencies between words are taken into account (see column 1, lines 49-52 of Landauer et al.). It is for this reason that one of ordinary skill in the art would have been motivated to implement latent semantic space into the method of translation by modifying the teaching elements of Hargrave, III et al. with those of Landauer et al.

Regarding claim 2, Hargrave, III et al. disclose a method of setting up and using a computer-assisted memory translation scheme for translating a sentence between a source language and a target language (see column 1, lines 11-14 and column 5, lines 11-16) comprising the steps of:

setting up a translation memory system (see column 4, lines 56-57) with a plurality of templates (see Table 4 in column 11, representing the data included in each text segment vector (an n-gram or word along with weight values) which “may be organized in database files in any convenient manner,” synonymous with a template database); and

performing a translation process using said translation memory system and a determination of common subsequences between the sentence and the plurality of templates (see lines 2-7 in column 5, describing the use of a similarity function for the vectors associated with a source language text string and target language text string, which generates a ranking of possible matches for the most similar text segments);

But Hargrave, III et al. fail to teach all the limitations of claim 2 including “using reduced latent semantic vector space.”

However, these features are well known in the art as evidenced by Landauer et al., which disclose a computer information retrieval using latent semantic structure comprising:

using reduced latent semantic vector space (see lines 4-7 of column 7 and lines 58-60 of column 14, describing the method of decomposing a matrix into reduced singular value representation (which is characterized by reduced latent semantic space) composed of a distinct term file and a data object file (synonymous to a source language template and a target language template) to create a reduced latent semantic vector space);

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teaching elements of Hargrave, III et al. with Landauer et al. Motivation for the combination is to provide a machine assisted translation tool between two different languages with a faster matching procedure by using vector-based retrieval (see column 5, lines 7-9 of Hargrave, III et al.); using the technique of latent semantic space to represent documents as sets of words represents them as parameters in such a way that dependencies between words are taken into account (see column 1, lines 49-52 of Landauer et al.), and reducing the dimension of the latent vector semantic space has the advantageous property that

Art Unit: 2654

small sources of variability in term usage are dropped and only the most important sources kept (see column 2, lines 27-30 of Landauer et al.).

Regarding claim 3, the primary reference Hargrave, III et al. disclose a method of setting up and using a computer-assisted memory translation scheme for translating a sentence between a source language and a target language performing steps of:

finding a subset of templates having closest similarity to the sentence based on a similarity measurement of the reduced latent semantic vector space (see lines 2-7 in column 5, describing the use of a similarity function for the vectors associated with a source language text string and target language text string, which generates a ranking of possible matches for the most similar text segments);

selecting, from said subset, a set of items having a heaviest weighted common subsequence between said sentence and said subset of templates (see column 14, lines 9-15, which describes grouping text segments having the highest score and sorted so that the most similar documents are retrieved first, synonymous with the idea of selecting, from a subset, a set of items having a heaviest weighted common subsequence after ranking); and

selecting, from the set of items, a template closest to said sentence as a sentence translation (see column 14, lines 16-18, describing a score given to the degree of matching between a query vector and a text segment vector, synonymous to a source language template and a target language template, for the purpose of selecting the template closest to the translation).

Hargrave, III et al. also discloses the limitation of claim 9, the method as set forth in claim 3 further comprising:

the step of determining a total weight of that portion of the template including the heaviest weighted common subsequence (see column 14, lines 1-5, which describes an array that accumulates a score representing the similarity between the query vector and each of the text segment vectors, determining the total weight of a portion of a subsequence including the heaviest common subsequence).

Motivation for performing a translation process with weights as this one would be to make identifying the closest match between the source and target templates more readily and reducing the dimension of the latent vector semantic space has the advantageous property that small sources of variability in term usage are dropped and only the most important sources kept (see column 2, lines 27-30 of Landauer et al.).

2. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hargrave, III et al. and Landauer et al., as applied to claims 1-3 and 9 above, and further in view of Kuno et al., US Patent No. 6,760,695 (filed Jun. 17, 1996).

Regarding claim 8, while Hargrave, III et al. and Landauer et al. teach all the limitations of claim 2 and 3, they fail to teach the method including the option of editing the templates. However, this feature is well known in the art as evidenced by Kuno et al., which disclose a method as set forth in claim 3, further comprising:

the step of editing the templates in both the source and target languages to reflect the sentence translation and improve the database (the notion is described in column 2, lines 8-14, allowing the user to interface with the system to edit the displayed translation, similar to allowing the user to edit the templates).

One of ordinary skill in the art at the time of the applicant's invention would have clearly recognized that including a feature for editing the templates would provide a more productive translation system and would save the time and tedium of considering potentially large numbers of incorrect, but highly ranked translations (see column 2, lines 15-24). In addition, saving these templates would greatly enhance the speed of operation of the method and translation memory (as described in column 9, lines 59-62, describing the saving of the aligned pairs of source language and target language text segments). It is for this reason that one of ordinary skill in the art would have been motivated to implement the editing feature in translation scheme by modifying the teaching elements of Hargrave, III et al. and Landauer et al. with those of Kuno et al.

Allowable Subject Matter

3. Claims 4-7, and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. This refers to the patent for "Probabilistic Information Retrieval Based on Differential Latent Semantic Space" to Tokuda et al., US Patent No. 6,654,740 (filed May 8, 2001), the patent for "Method and System for Optimally Searching a Document Database Using a Representative Semantic Space" to Sommer et al., US Patent No. 6,847,966 (filed April 24, 2002), the patent for "Automatic Bilingual Translation Memory System" to Roche et al., US

Art Unit: 2654

Patent No. 6,535,842 (filed Dec. 10, 1998), and the patent for "Method for Retrieving Semantically Distant Analogies" to Gillis, US Patent No. 6,523,026 (filed Oct. 2, 2000).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eunice Ng whose telephone number is 571-272-2854. The examiner can normally be reached on Monday through Friday, 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on 571-272-7602. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Eunice Ng

AU 2654


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SUPERVISORY PATENT EXAMINER